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Amendments to the Claims

1-22 Cancelled

23. (Currently Amended) A self sealing vessel assembly for high pressure microwave assisted chemistry, said vessel assembly comprising:

 a polymeric cylinder and a circular polymeric cap for said cylinder;

 said cylinder being closed at one end and open at the other end to receive said cap;

 said open end of said cylinder comprising a lip that is beveled inwardly from said open end;

 said circular polymeric cap having a beveled lower edge that engages said beveled lip when said cap is place upon said polymeric cylinder;

 a composite sleeve surrounding said polymeric cylinder, said composite sleeve being formed of a microwave transparent inner cylindrical tetrafluoroethylene polymeric layer, a first microwave transparent wound layer adjacent to and concentric with said inner polymeric layer in which said winding is selected from the group consisting of filaments and yarns, a structural polymer layer on said wound layer, and a microwave transparent outer tetrafluoroethylene polymeric layer on said structural polymer layer;

 including at least one wound layer in which the winding is selected from the group consisting of filaments and yarns; and

 a supporting frame that extends along said cylinder and across said lid and across said closed end of said cylinder for preventing said lid from being displaced from said cylinder when pressure is generated inside of said vessel.

24. (Original) A vessel assembly according to Claim 23 and further comprising a choke cylinder depending from said beveled lower edge of said cap, said choke cylinder having an outer diameter substantially the same as the inner diameter of said polymeric

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cylinder so that said choke provides a self sealing mechanism for said cylinder as pressure from a chemical reaction increases within said cylinder.

25. (Original) A vessel assembly according to Claim 23 wherein said frame comprises:
a threaded opening in said frame adjacent said cap; and
a bolt in said threaded opening that bears on said cap when tightened in said threaded opening.

26. (Original) A vessel assembly according to Claim 23 wherein said cap and said cylinder both comprise fluorinated hydrocarbons.

27. (Cancelled).

28. (Original) A composite sleeve according to Claim 27 comprising a plurality of pairs of adjacent concentric layers of structural polymer and textiles between said first wound layer and said outer polymeric layer.

29. (Original) A composite sleeve according to Claim 28 wherein said textile layers in said pairs are selected from the group consisting of woven fabrics, braided fabrics, nonwoven fabrics, and knitted fabrics.

30. (Original) A composite sleeve according to Claim 28 wherein said textile layers in said pairs comprise a winding selected from the group consisting of filaments and yarns.

31. (Cancelled).

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32. (Original) A vessel assembly according to Claim 23 wherein said supporting frame is flexible under a predetermined force exerted by pressure inside said cylinder and against said cap, so that the flexing of said frame at said pressure allows said cap to disengage from said cylinder and release the pressure inside.

33. (Original) A system for microwave assisted chemistry comprising:
a source of microwave radiation;
a cavity in microwave communication with said source; and
a plurality of vessels according to Claim 23 in said cavity.

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34. (Original) A system according to Claim 33 wherein said source is selected from the group consisting of magnetrons, klystrons, solid state devices, and switching power supplies.

35. (Original) A system according to Claim 33 and further comprising a waveguide between said source and said cavity.

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